

A NEW SPECIES OF *NOTOPLAX* (MOLLUSCA: POLYPLACOPHORA: ACANTHOCHITONIDAE), FROM NEW SOUTH WALES, AUSTRALIA

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Summary

GOWLETT-HOLMES, K. L. (1988) A new species of *Notoplax* (Mollusca: Polyplacophora: Acanthochitonidae), from New South Wales, Australia, *Trans. R. Soc. S. Aust.* **112**, 169-173, 30 November, 1988.

A new species, *Notoplax lancemilnei* sp. nov., is described from deep water off central New South Wales, Australia. It most closely resembles *N. speciosa* Adams but is distinguished from it by the larger, more irregular tegmentum pustules, ridges filling in part of the insertion plate grooves, and by its colour. The new species was trawled by the F.R.V. "Kapala" in 400-500 m of water.

KEY WORDS: Chiton, Polyplacophora, Acanthochitonidae, New South Wales, Australia, *Notoplax*, new species

Introduction

The shallow water chiton fauna of eastern Australia is relatively well known (Iredale & Hull 1927), but few collections of chitons have been made in waters over 50 m in depth. During recent experimental fishing operations in the continental shelf waters of eastern Australia by the F.R.V. "Kapala", a number of chitons belonging to the genus *Notoplax* were collected. Most of these proved to be specimens of *Notoplax mayi* (Ashby, 1922), but three specimens could not be assigned to any known species of *Notoplax* and were recognised as belonging to an undescribed species of the genus. This new species is described here.

Materials and Methods

The material reported here is deposited in the Australian Museum, Sydney (AM) and the South Australian Museum, Adelaide (SAM). It was trawled by the F.R.V. "Kapala" during experimental fishing operations. All material is preserved in 2% formaldehyde/propylene glycol solution. As all specimens are curled, length measurements are along the curved surface, and width measurements are maximum width. A linear measurement is also given for the holotype. As the radula of the holotype disintegrated during preparation, the radula was removed from one of the paratypes (SAM D18436) for examination under the scanning electron microscope (SEM) using the method of Bandel (1984). Colour descriptions are from spirit specimens and follow Kornerup & Wanscher (1978).

Notoplax lancemilnei sp. nov.

FIGS 1-3.

Holotype: AM C151130, partially disarticulated, in spirit 107 × 37.45 mm (39.7 mm linear), trawled

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by F.R.V. "Kapala" at 439 m depth, off Wollongong, N.S.W., Aust., (34°21-19'S, 151°23-25'E), collected by K. Graham, 13.xii.1978.

Paratypes: SAM D18436, one complete specimen (radula removed), in spirit 79 × 29.35 mm, with same collection data as holotype. AM C148995, complete specimen in spirit, 133 × 39.35 mm, trawled by F.R.V. "Kapala" at 503-452 m depth, off Sydney, N.S.W., Aust., (34°18-23'S, 151°26-23'E), collected by K. Graham, 5.xii.1983.

Diagnosis: Large chiton to about 100 mm. Carinated; low elevation; valves small in relation to girdle (Figs 1A-D). Tegmentum white; about 30-35% of articulamentum; jugum smooth, about 1/12 width of tegmentum; pustules irregular, "U"-shaped, rounded to almost rectangular. Articulamentum white, slit formula 5/1/5, with ridges filling in part of slit grooves. Girdle very fleshy, completely encroaching between valves; colour pinkish white, made up of a brownish red base colour with dense clear spicules; small white sutural tufts (Fig. 2A).

Description of Holotype: Tegmentum of anterior valve (Fig. 3A) with five slightly raised radial ribs; sculptured with random pustules, very small, not coalescing, mainly "U"-shaped near apex, becoming larger and irregularly rounded in shape towards outer edge of tegmentum, with very large, irregular pustules on ribs. Slits 5, very short, about 1/10 width of insertion plate, in broad, shallow grooves for 1/4-1/3 width of insertion plate, grooves then filled in with prominent ridge to edge of tegmentum.

Median valves (Fig. 3B, D) beaked, anterior edge slightly concave; jugum smooth, narrow, about 1/12 width of tegmentum, toothed near beak. Lateral and pleural areas separated by low diagonal rib; both areas sculptured with random pustules, pustules very small, mainly "U"-shaped near beak, becoming larger and irregularly rounded to almost rectangular toward outer edge of tegmentum,



Fig 1. *Notoplax lancemilnei* sp. nov. paratype (AM C148995), A. lateral view, $\times 1.5$; B. dorsal view, $\times 1.8$; C. anterior view, $\times 1.6$; D posterior view, $\times 1.6$.

pustules usually larger on rib. Tegmentum with numerous random aesthetes on and in between pustules (Fig. 2B). Slit 1, short, about 1/6 width of insertion plate, in broad, shallow groove 3/4-4/5 width of insertion plate, groove bordered by distinct ridges which merge to form a broad ridge filling in the groove to edge of tegmentum; slit, groove and ridge angled sharply posteriorly across insertion plate.

Posterior valve (Fig. 3C, E, F) tegmentum longer than wide; jugum smooth, narrow, weakly toothed near mucro. Antemucronal area sculptured with random, irregular "U"-shaped to almost rectangular pustules, very small near mucro, becoming larger towards outer edge of tegmentum. Mucro granulose, in posterior 1/4 of tegmentum; postmucronal area slightly convex, steep, sculptured like antemucronal area with four ribs of larger, irregular, rounded pustules. Slits 5, short, 1/5-1/6 width of insertion plate, in deep grooves 1/2 to almost whole width of insertion plate, grooves bordered by distinct ridges which merge to form ridges like on median valves to edge of tegmentum.

Girdle large, very fleshy, completely encroaching between valves, densely covered with numerous clear, long (1.5-3 mm), thin (90-100 μm), very slightly curved, sharp-tipped spicules. Sutural tufts small, with many clear, straight, sharp-tipped spicules (1-2.5 mm long, 70-100 μm wide).

Ctenidia numerous, merobranchial, aboral, 33 on right side and 36 on left, tapering large to small anteriorly.

The radula disintegrated during preparation but examination of the fragments showed it to be identical to the radula extracted from the paratype (SAM D18436).

Etymology: Named for Mr K. Lance Milne (1915-) who, as an avid collector of chitons from many parts of the world, has made significant contributions to the collections of SAM. In particular, his large, diverse collection of chitons in spirit forms the basis of SAM's present significant spirit collection of chitons. He also published several papers on chitons, including descriptions of several new species from eastern Australia. His continuing enthusiasm and support for work on chitons in Australia is greatly appreciated.

Additional Characters from Paratypes: Radula (Fig. 2C,D) with central teeth narrower basally, with wider, asymmetrical, concave heads; first lateral teeth forming large folds around central teeth, one on higher side of central tooth longer than other; major lateral teeth elongate, narrower basally, with wider tricuspidate heads, central cusp about twice as long as outer cusps, central cusp with a shallow dorsal groove either side of median ridge.

Variation: Other than minor variations in

sculpture, the two paratypes are like the holotype and vary only in the number of gills. The smaller paratype has a similar number of gills to the holotype, with 34 ctenidia on right and 33 ctenidia on left sides. As the other paratype is much larger than the holotype, it has more gills, with 44 ctenidia on right and 39 ctenidia on left sides. In this larger paratype, the anterior jugum of the posterior valve breaks up into a series of large "U"-shaped pustules. This feature may be related to greater maturity of the specimen.

Range: Central New South Wales, Australia.

Habitat: Unknown. Trawled in 400-500 m depth.

Comparison with other species: *N. lancemilnei* was compared with other species of *Notoplax* in the collections of AM, SAM, the Museums of Victoria, Melbourne (NMV), the Western Australian Museum, Perth (WAM) and the Tasmanian Museum and Art Gallery, Hobart (TM). It most closely resembles *N. speciosa* (H. Adams, 1861) but can be distinguished by the characters given in Table 1. Both *N. lancemilnei* and *N. speciosa* can be distinguished from other Australian species of *Notoplax* by their large size and the large, fleshy girdle with long, fine spicules completely encroaching between the relatively small valves.

Remarks: An unusual feature of *N. lancemilnei* is the asymmetrical heads of the central teeth of the radula. This feature has not been recorded for any other member of the family. However, I have found it also in two other species, both of uncertain systematic status, in the family. A more detailed examination of radulae of species in the Acanthochitonidae is required to establish the extent of this unusual feature. The only other record of central radula teeth with asymmetric heads in the Polyplacophora is for *Chorioplax grayi* (H. Adams & Angus, 1864), the sole member of the family Chorioplacidae (Gowlett-Holmes 1987).

The current restricted range of *N. lancemilnei* is a reflection of the few collections of chitons that have been made in deep water in Australian seas. This range undoubtedly will be extended when further collections of chitons from deep water are made.

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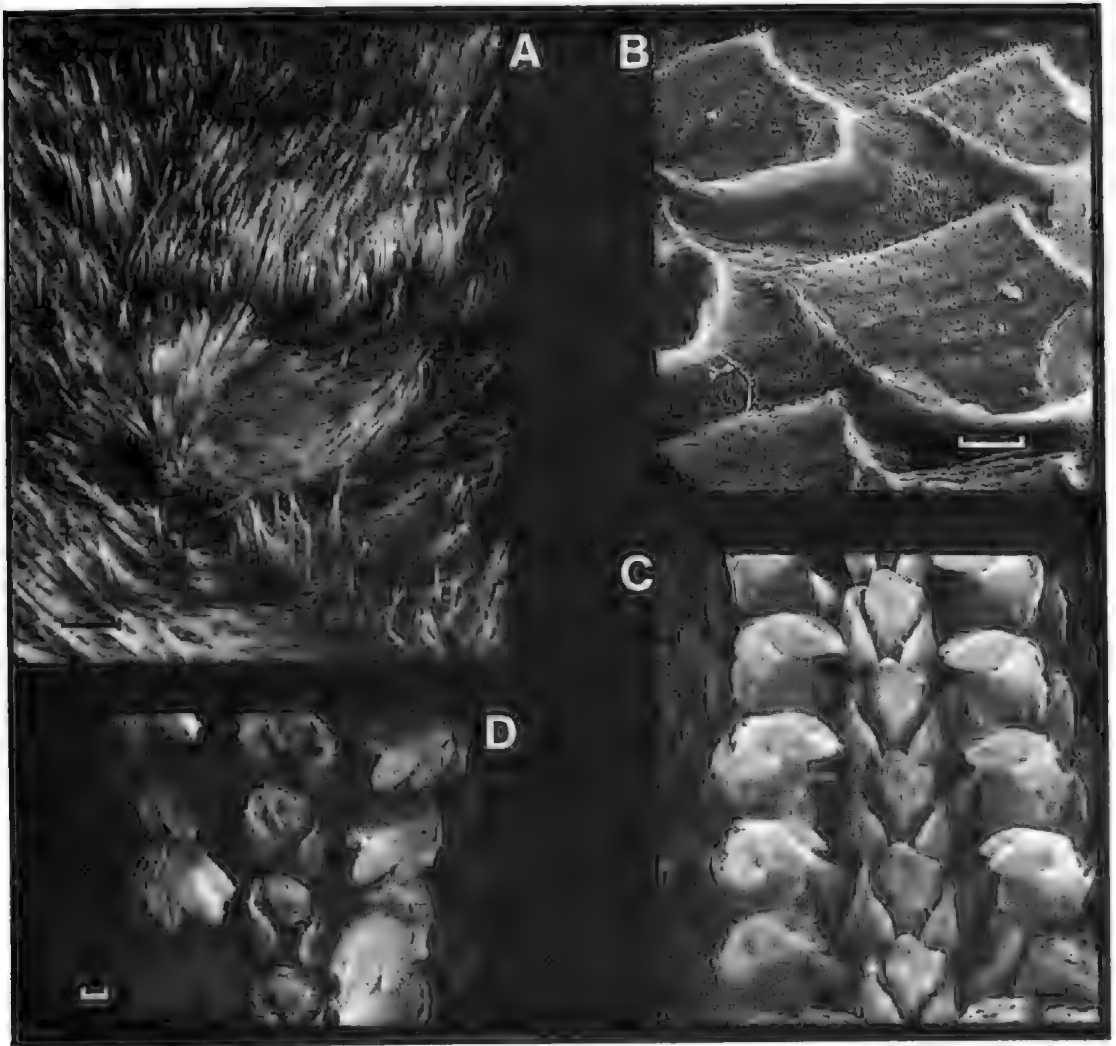


Fig. 2. *Notoplax lancemilnei* sp. nov. A. girdle and sutural tuft, paratype, scale bar = 1 mm (AM C148995); B. detail of tegmentum surface showing aesthetes, holotype, scale bar = 100 μ m (AM C151130); C. radula, paratype, scale bar = 100 μ m (SAM D18436); D. radula, detail of major lateral teeth heads, paratype, scale bar = 100 μ m (SAM D18436).

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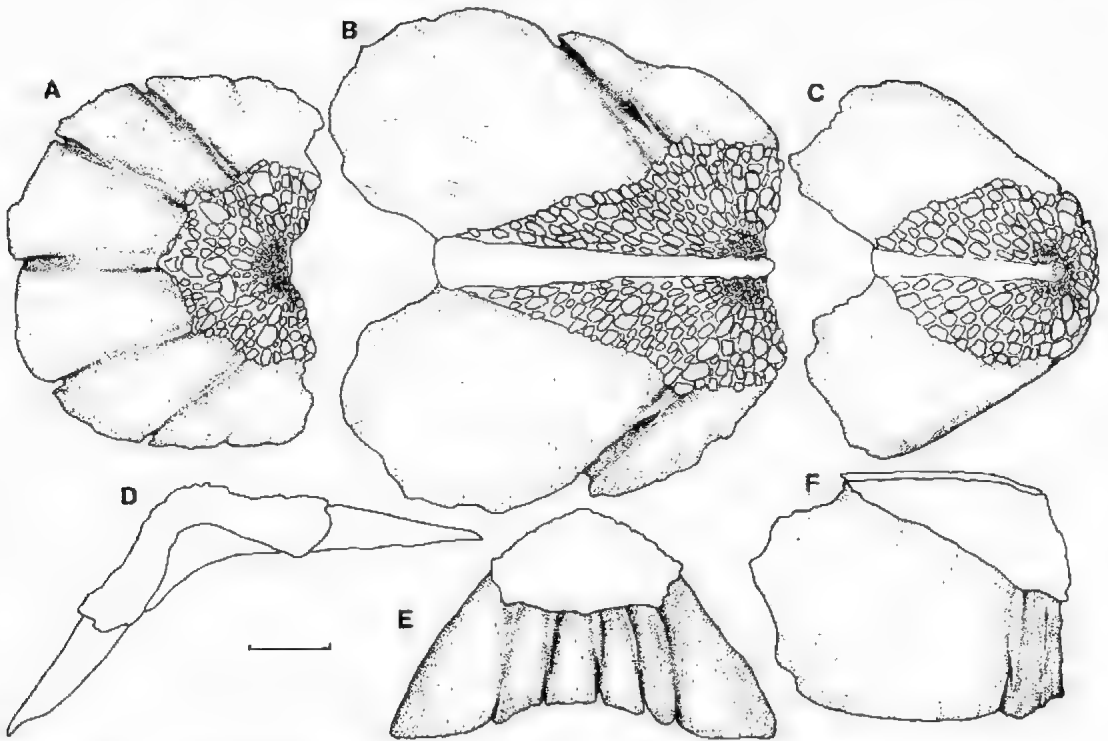


Fig. 3. *Notoplax lancemilnei* sp. nov. holotype (AM-C151130), A. anterior valve; B. median valve; C. posterior valve; D. median valve (posterior profile); E. posterior valve (posterior profile); F. posterior valve (lateral profile); scale bar = 2 mm.

TABLE 1. Distinguishing characters of *Notoplax speciosa* and *N. lancemilnei* sp. nov.

Character	<i>N. speciosa</i>	<i>N. lancemilnei</i>
Tegmentum colour	coloured	white
Girdle colour	orange, greyish to brownish orange	pinkish white
Sutural tuft colour	orange	white
Pustules on valves	small	larger, more irregular
Insertion plate slit length (width insertion plate)		
1. anterior valve	1/5-1/4	1/12
2. median valves	about 1/3	about 1/6
Insertion plate slit grooves	grooves to edge of tegmentum, no ridges	grooves partly to edge of tegmentum, ridges rest of way
Ctenidia each side	26-32	33-44
Radula		
1. central teeth	head symmetrical	head asymmetrical
2. major lateral teeth	central cusp of head about 4 times as long as outer cusps	central cusp of head about twice as long as outer cusps